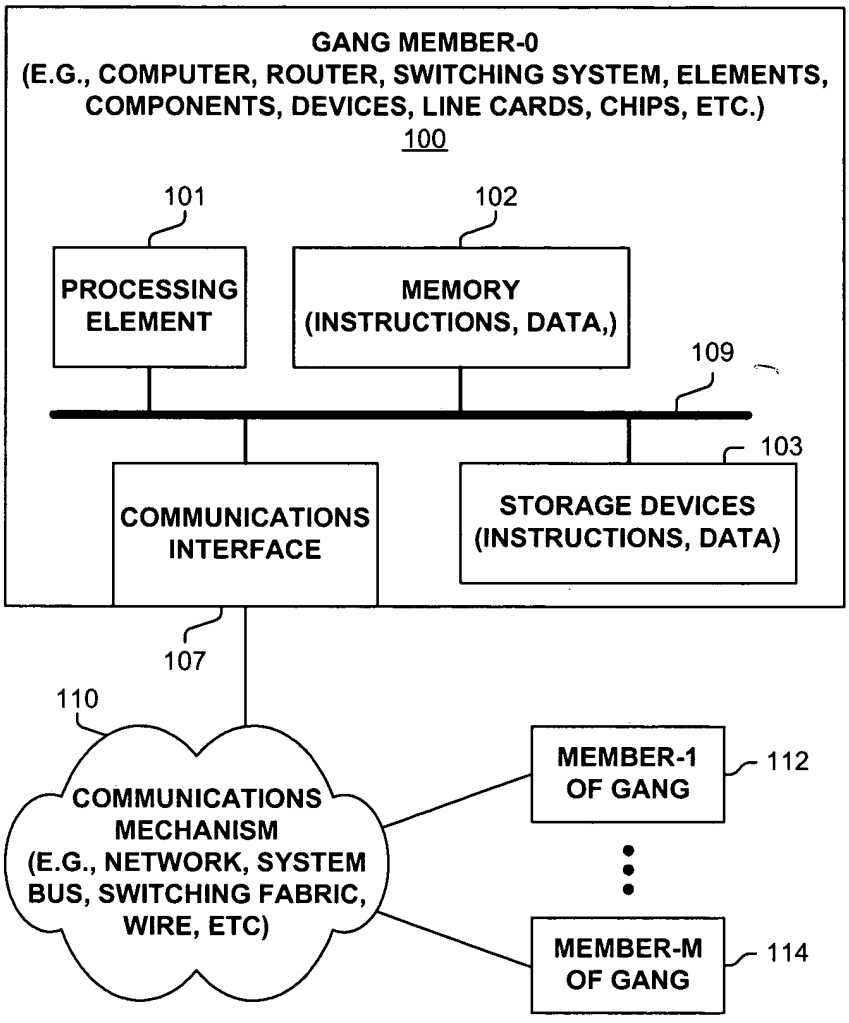
GANG MEMBER-0
(E.G., COMPUTER, ROUTER, SWITCHING SYSTEM, ELEMENTS, COMPONENTS, DEVICES, LINE CARDS, CHIPS, ETC.)
100
101
102
PROCESSING ELEMENT
MEMORY (INSTRUCTIONS, DATA,)
109
103
COMMUNICATIONS INTERFACE
STORAGE DEVICES (INSTRUCTIONS, DATA)
107
110
COMMUNICATIONS MECHANISM (E.G., NETWORK, SYSTEM BUS, SWITCHING FABRIC, WIRE, ETC)
MEMBER-1 OF GANG
112
MEMBER-M OF GANG
114

FIGURE 1A

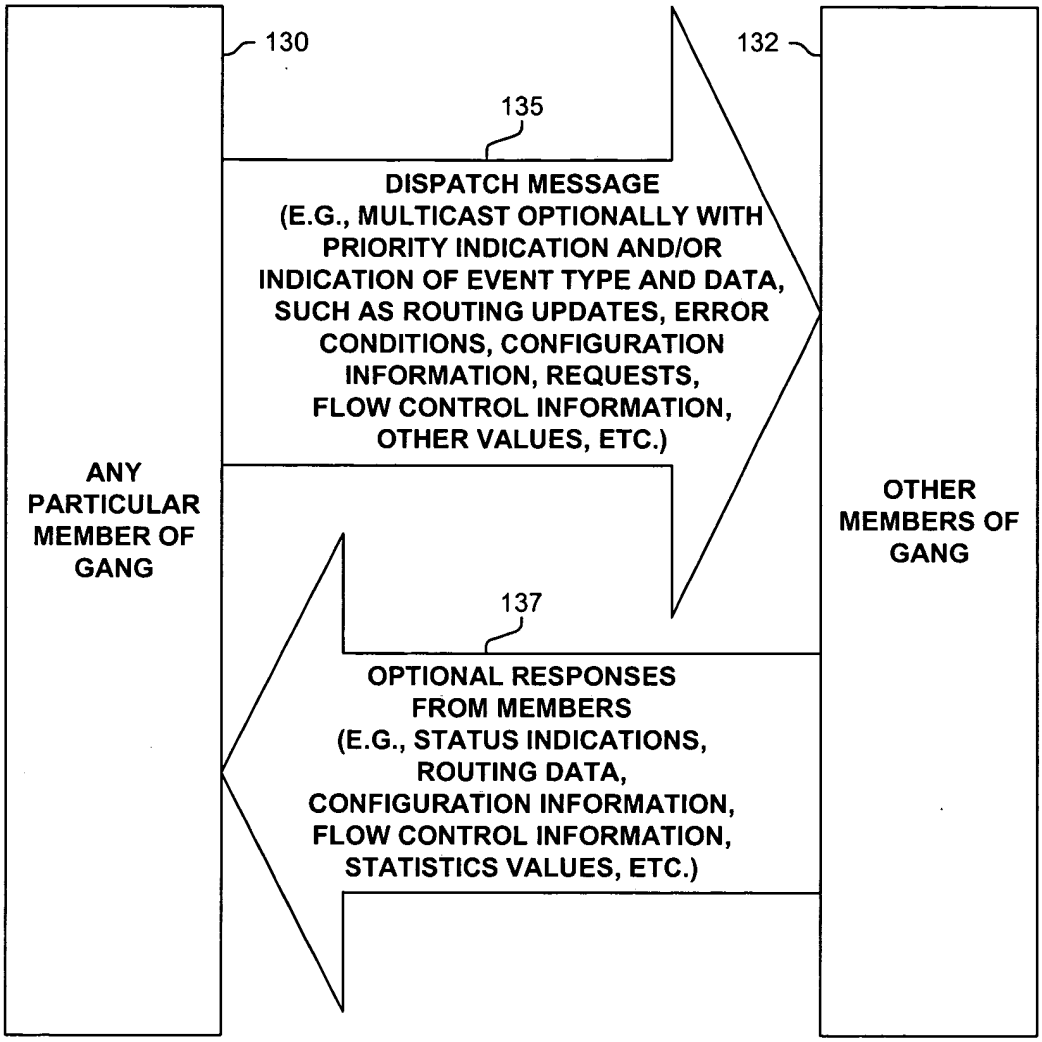
130
132
135
DISPATCH MESSAGE
(E.G., MULTICAST OPTIONALLY WITH
PRIORITY INDICATION AND/OR
INDICATION OF EVENT TYPE AND DATA,
SUCH AS ROUTING UPDATES, ERROR
CONDITIONS, CONFIGURATION
INFORMATION, REQUESTS,
FLOW CONTROL INFORMATION,
OTHER VALUES, ETC.)
ANY
PARTICULAR
MEMBER OF
GANG
OTHER
MEMBERS OF
GANG
137
OPTIONAL RESPONSES
FROM MEMBERS
(E.G., STATUS INDICATIONS,
ROUTING DATA,
CONFIGURATION INFORMATION,
FLOW CONTROL INFORMATION,
STATISTICS VALUES, ETC.)

FIGURE 1B

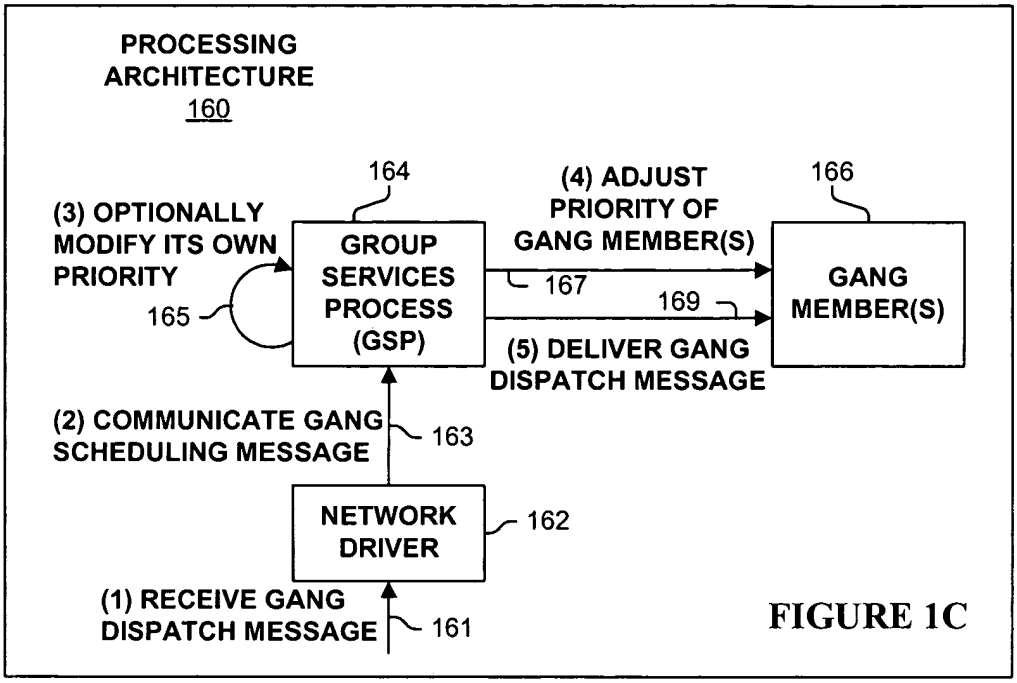

FIGURE 1C

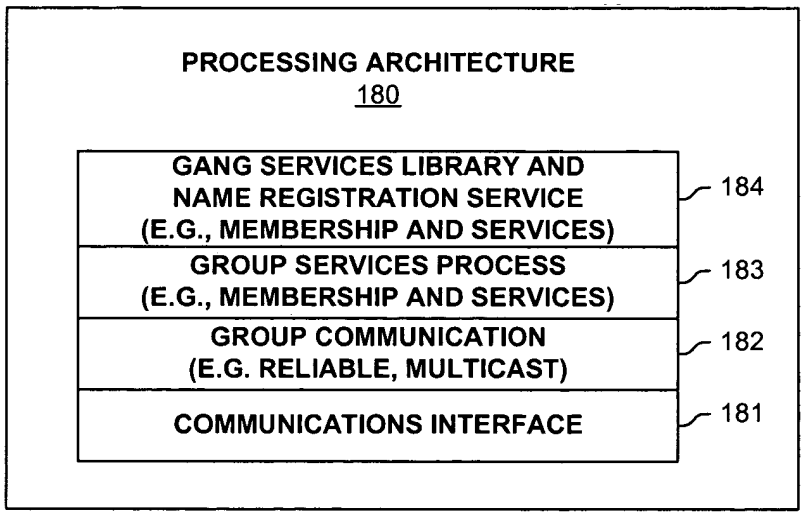

FIGURE 1D

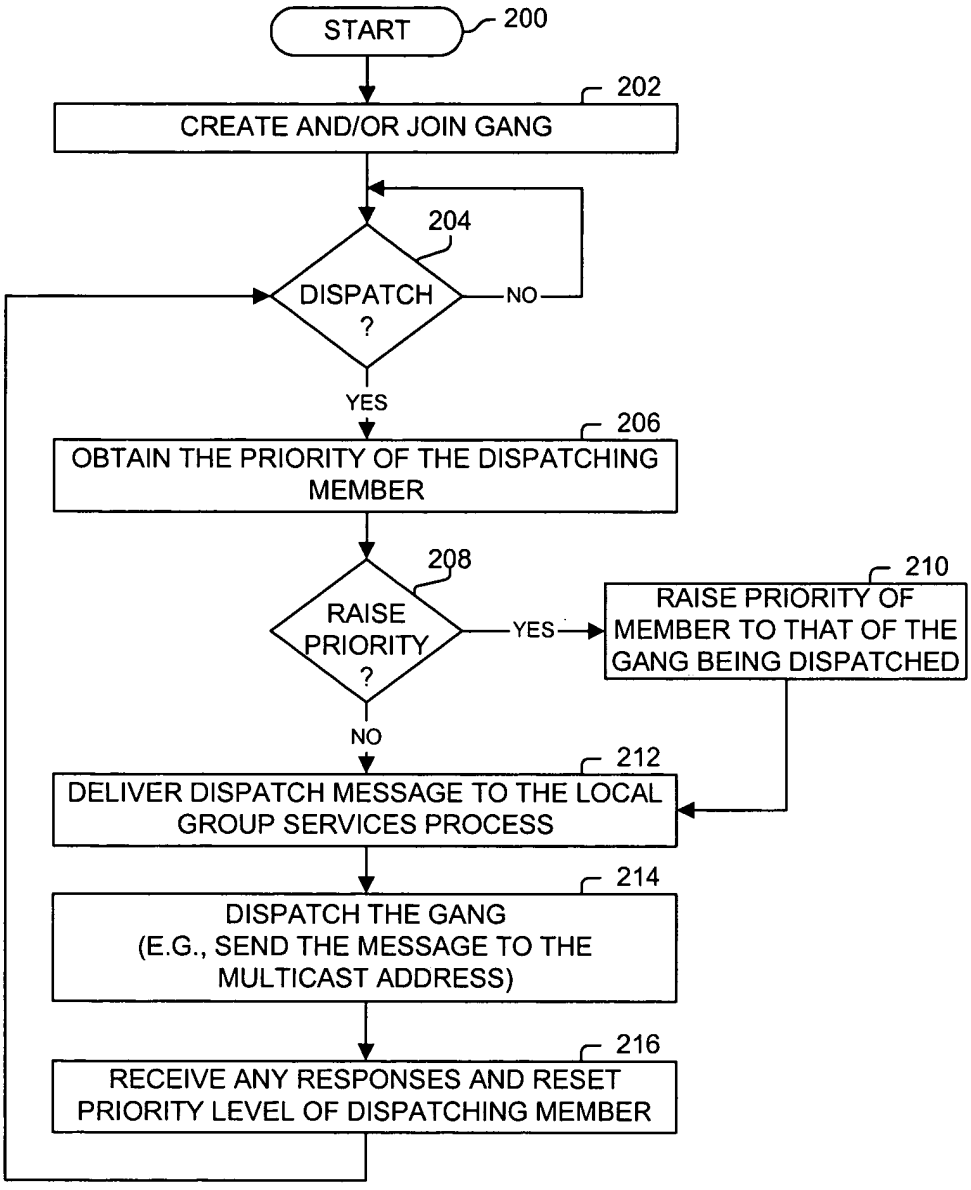
START
200
CREATE AND/OR JOIN GANG
202
DISPATCH ?
204
NO
YES
OBTAIN THE PRIORITY OF THE DISPATCHING MEMBER
206
RAISE PRIORITY ?
208
YES
RAISE PRIORITY OF MEMBER TO THAT OF THE GANG BEING DISPATCHED
210
NO
DELIVER DISPATCH MESSAGE TO THE LOCAL GROUP SERVICES PROCESS
212
DISPATCH THE GANG (E.G., SEND THE MESSAGE TO THE MULTICAST ADDRESS)
214
RECEIVE ANY RESPONSES AND RESET PRIORITY LEVEL OF DISPATCHING MEMBER
216

FIGURE 2A

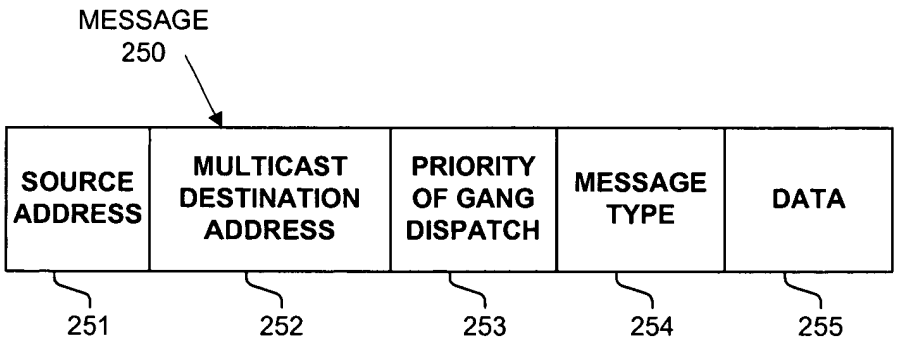
MESSAGE
250
SOURCE ADDRESS
MULTICAST DESTINATION ADDRESS
PRIORITY OF GANG DISPATCH
MESSAGE TYPE
DATA
251
252
253
254
255

FIGURE 2B

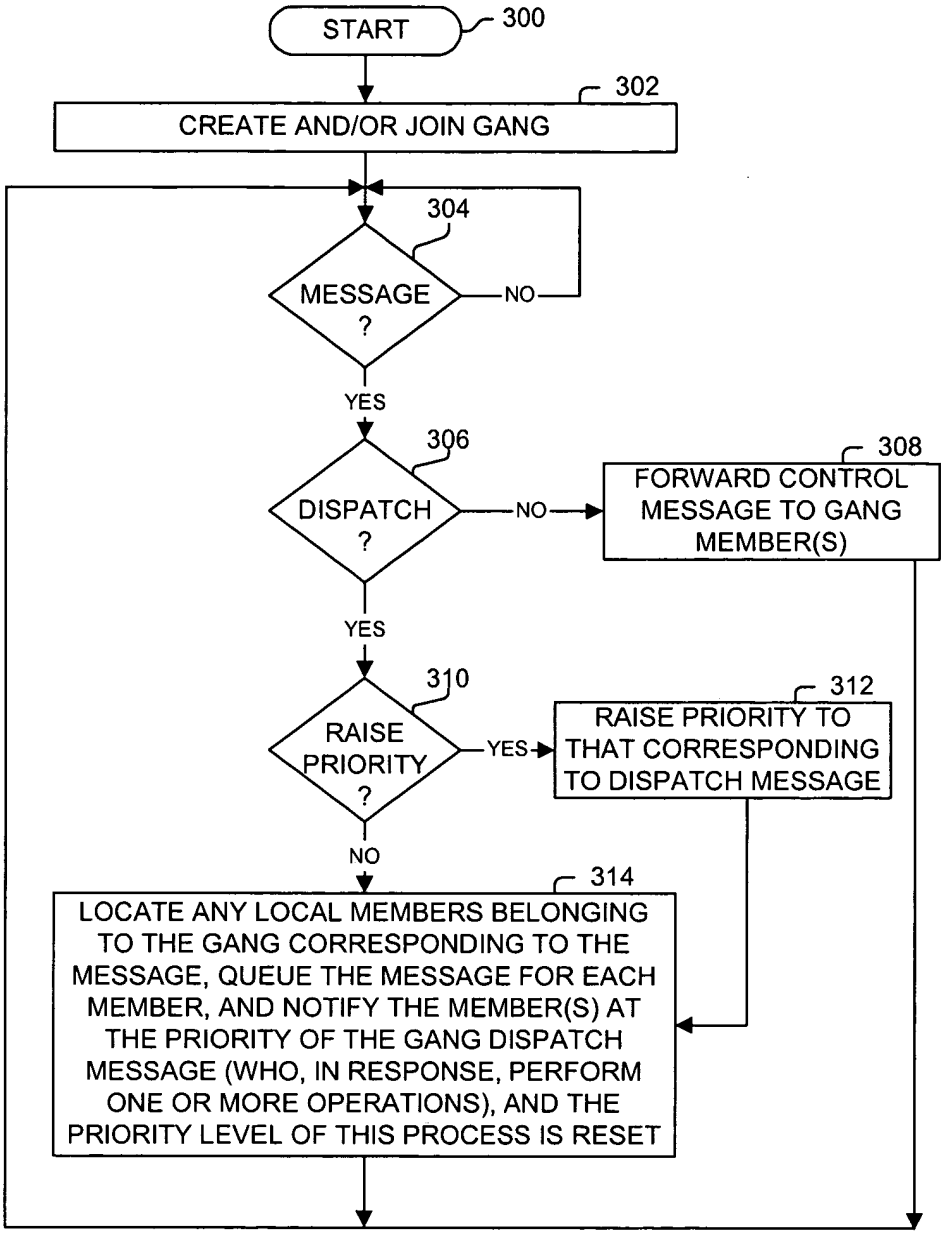
START
300
302
CREATE AND/OR JOIN GANG
304
MESSAGE ?
NO
YES
306
DISPATCH ?
NO
308
FORWARD CONTROL MESSAGE TO GANG MEMBER(S)
YES
310
RAISE PRIORITY ?
YES
312
RAISE PRIORITY TO THAT CORRESPONDING TO DISPATCH MESSAGE
NO
314
LOCATE ANY LOCAL MEMBERS BELONGING TO THE GANG CORRESPONDING TO THE MESSAGE, QUEUE THE MESSAGE FOR EACH MEMBER, AND NOTIFY THE MEMBER(S) AT THE PRIORITY OF THE GANG DISPATCH MESSAGE (WHO, IN RESPONSE, PERFORM ONE OR MORE OPERATIONS), AND THE PRIORITY LEVEL OF THIS PROCESS IS RESET

FIGURE 3

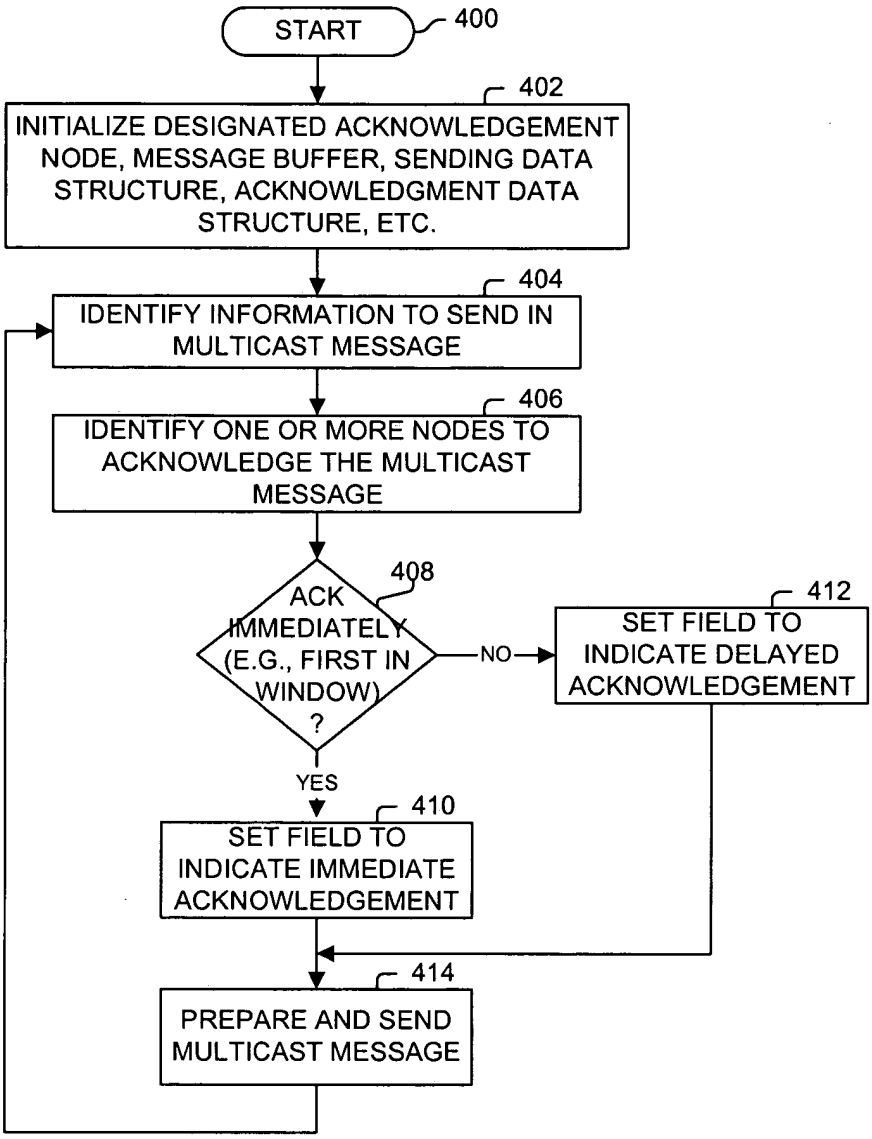
START
400
402
INITIALIZE DESIGNATED ACKNOWLEDGEMENT NODE, MESSAGE BUFFER, SENDING DATA STRUCTURE, ACKNOWLEDGMENT DATA STRUCTURE, ETC.
404
IDENTIFY INFORMATION TO SEND IN MULTICAST MESSAGE
406
IDENTIFY ONE OR MORE NODES TO ACKNOWLEDGE THE MULTICAST MESSAGE
408
ACK IMMEDIATELY (E.G., FIRST IN WINDOW) ?
NO
412
SET FIELD TO INDICATE DELAYED ACKNOWLEDGEMENT
YES
410
SET FIELD TO INDICATE IMMEDIATE ACKNOWLEDGEMENT
414
PREPARE AND SEND MULTICAST MESSAGE

FIGURE 4A

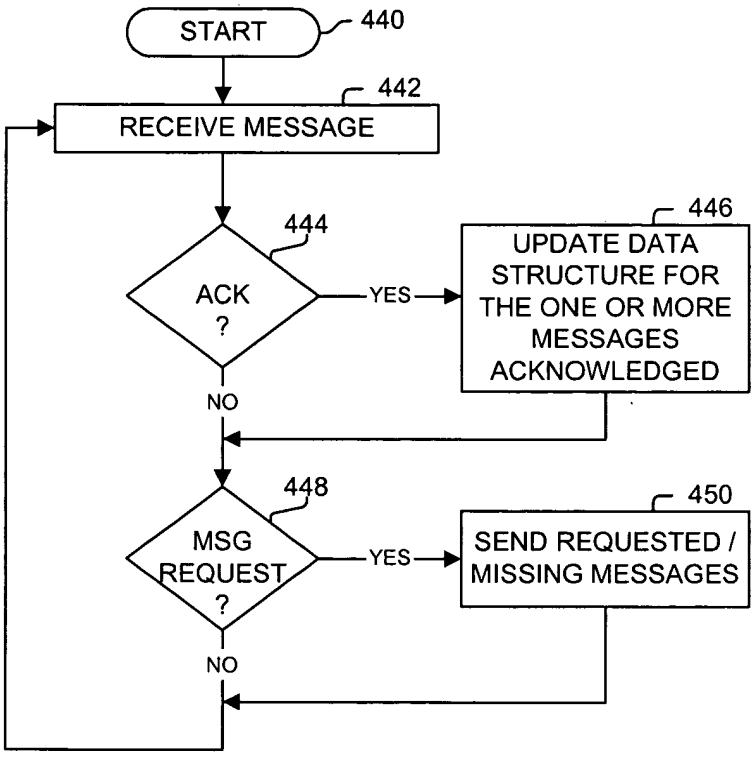
START
440
442
RECEIVE MESSAGE
444
ACK ?
YES
446
UPDATE DATA STRUCTURE FOR THE ONE OR MORE MESSAGES ACKNOWLEDGED
NO
448
MSG REQUEST ?
YES
450
SEND REQUESTED / MISSING MESSAGES
NO

FIGURE 4B

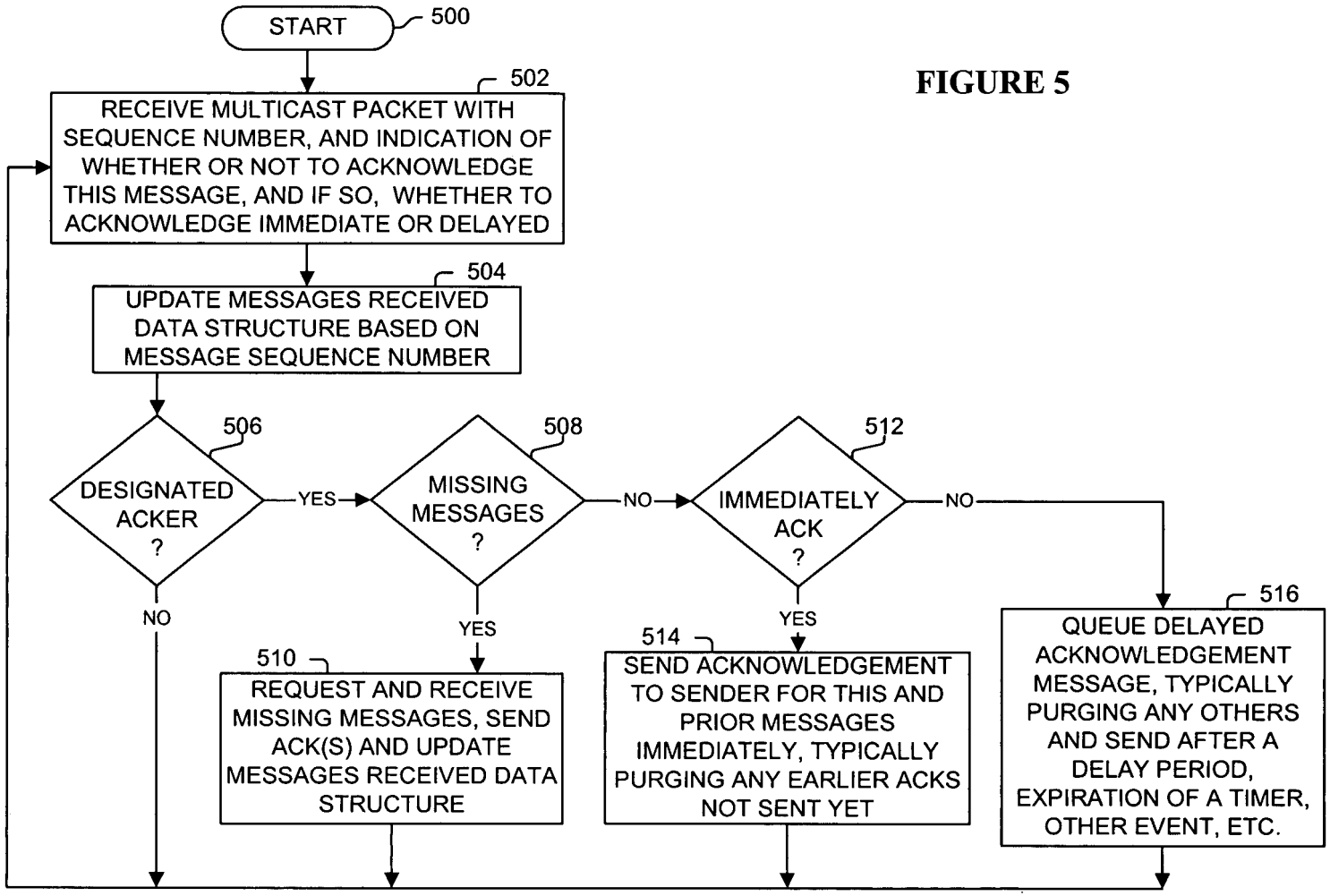
START
500
502
RECEIVE MULTICAST PACKET WITH SEQUENCE NUMBER, AND INDICATION OF WHETHER OR NOT TO ACKNOWLEDGE THIS MESSAGE, AND IF SO, WHETHER TO ACKNOWLEDGE IMMEDIATE OR DELAYED
504
UPDATE MESSAGES RECEIVED DATA STRUCTURE BASED ON MESSAGE SEQUENCE NUMBER
506
DESIGNATED ACKER ?
YES
508
MISSING MESSAGES ?
NO
512
IMMEDIATELY ACK ?
NO
516
QUEUE DELAYED ACKNOWLEDGEMENT MESSAGE, TYPICALLY PURGING ANY OTHERS AND SEND AFTER A DELAY PERIOD, EXPIRATION OF A TIMER, OTHER EVENT, ETC.
NO
YES
510
REQUEST AND RECEIVE MISSING MESSAGES, SEND ACK(S) AND UPDATE MESSAGES RECEIVED DATA STRUCTURE
YES
514
SEND ACKNOWLEDGEMENT TO SENDER FOR THIS AND PRIOR MESSAGES IMMEDIATELY, TYPICALLY PURGING ANY EARLIER ACKS NOT SENT YET

FIGURE 5

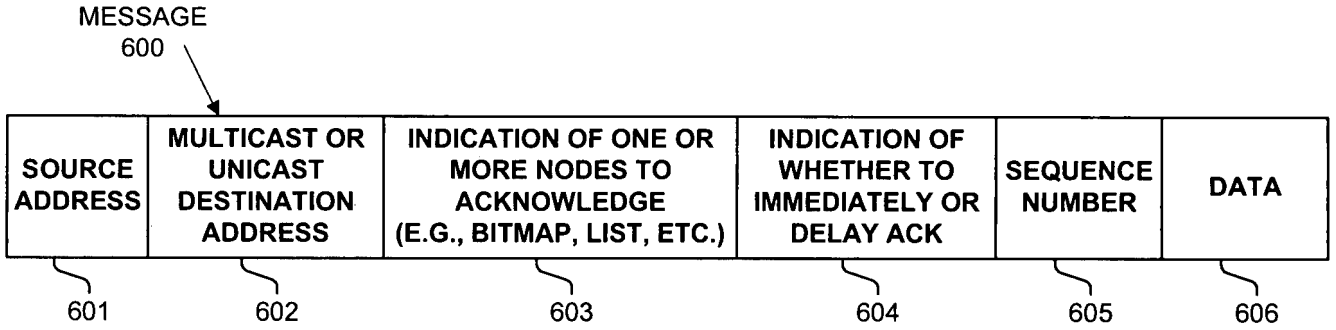

FIGURE 6A

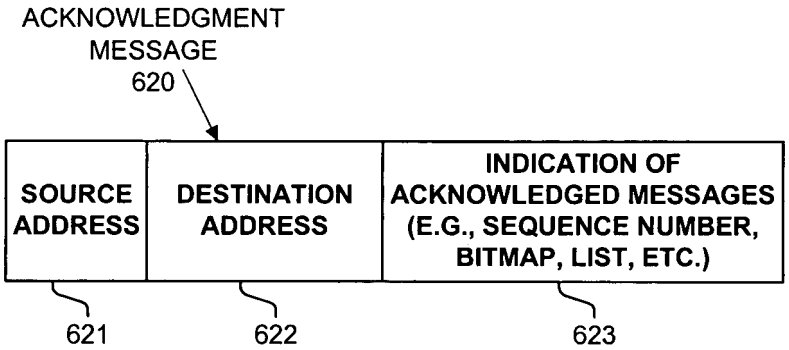

FIGURE 6B

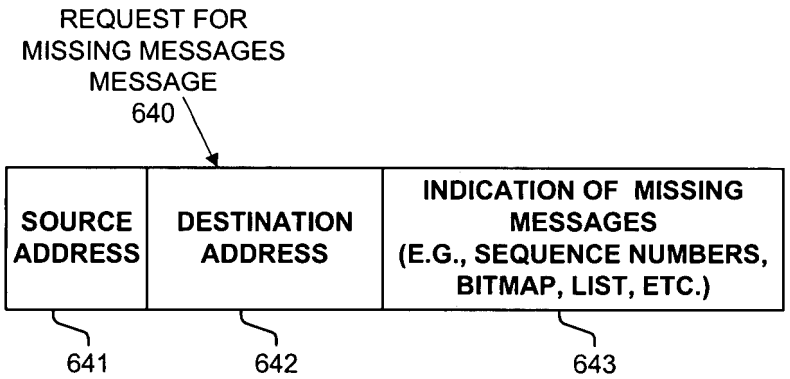

FIGURE 6C